Cooperative Efforts to Improve Understanding of Copper Fate and Transport in an Urban Environment

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In the San Francisco Bay, copper is a contaminant of concern for which stormwater runoff is a potentially significant transport pathway. Copper may be released to the landscape from several sources, including automobile brake pad wear debris. Until recently, all segments of the Bay were on California's Clean Water Act section 303(d) list of waters impaired due to copper. In 2003, California developed, and the U.S. Environmental Protection Agency (U.S. EPA) approved site-specific water quality objectives, effectively removing the Lower South San Francisco Bay (LSSFB) from its copper-impaired list. Although the LSSFB is no longer listed as impaired due to copper, recent changes in brake pad formulation have raised the possibility of increasing nonpoint source copper loadings to the Bay and, thus, the potential for future impairments to Bay water quality. In response to concerns about copper released to the environment in brake pad wear debris, regulatory, environmental, stormwater management, and industry stakeholders formed the Brake Pad Partnership (BPP) in 1996 to "implement a program aimed at identifying and preventing impacts on surface water quality that potentially arise from the use of automotive brake pads." (ABAG, 2002) This program includes a set of interrelated data collection and environmental modeling efforts, including brake pad wear characterization, atmospheric deposition modeling, stream water and dry deposition sampling, watershed runoff modeling, and hydrodynamic modeling of Bay waters, to predict potential impacts on Bay water chemistry. This poster focuses on initial watershed runoff modeling activities conducted by U.S. EPA staff as a contribution to BPP efforts. Results of further environmental sampling and atmospheric deposition modeling are anticipated. When available, these results will be used to refine watershed model inputs. Together with the monitoring data, model results should lead to enhanced understanding of copper fate and transport in a major urban environment.